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A Dissertation on Hydrocephalus Acutus

By

Passed March 5th 1827
W. E. H

Lucius E. Nicholson

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Virginia

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To the Medical Faculty of the University of Pensylvania the following dissertation is respectfully submitted, for the degree of Doctor of Medicine, by the Author:—

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Hydrocephalus Acutus. —

The diversity and contrariety of opinion entertained by medical writers on this subject together with the equivocal nature of its symptoms renders it a source of no inconsiderable embarrassment to the young and inexperienced student to write a correct dissertation on this disease. —

Hydrocephalus was divided by ancient Nosologists into, External and Internal; the former is distinguished by an accumulation of water between the scalp and cranium the latter by a collection of water between the membranes or in the ventricles. —

Hydrocephalus External, is of very rare occurrence; but it does sometimes happen, and when it does, it should be regarded only

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as Anasarca of the scalp says Dr. Chapman. It is now divided by systematic writers into Acute and Chronic; The Acute species I have selected for the subject of my inaugural dissertation. ——

This disease is said to be chiefly incident to children between two and six years of age rarely occurring later than the fourteenth year: that it is not exclusively confined to children, we have numerous instances on record to prove. Adults being more subject to its attacks than is generally supposed. Those adults who most frequently suffer from this disease, are those of a dropsical diathesis; pale and sallow complexion; and much affected with pains in the head. ——

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parts of the body in young subjects; the great vascularity, and laxity of the brain producing an undue determination of blood to that viscus: by which the ~~disposition to~~ effusion is increased, together with the many and diversified accidents to which the volatile amusements of children constantly exposes them (which act as remote causes) we cannot hesitate for a moment in saying that children should be the most frequent sufferers by this direful malady; and those of a Scrofulous and Rickety diathesis most subject to its attacks, and females more so than males according to Morgagni. But from subsequent researches on this disease, we are disposed to think this opinion vague and unfounded. ———

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commences with all the ordinary symp-toms of fever, as languor loss of appetite nausea with occasional vomiting, increa-sed heat, hurried respiration, flushed face foul tongue, pain in the head back and extremities, accelerated pulse, throb-bing of the temporal arteries, attended with great thirst, exacerbations always take place towards the evening, and become milder in the morning. —

Hydrocephalus acutus may be con-sidered as exhibiting three stages, though the division is very arbitrary, for the symptoms of the different stages will be found blended together or one or more of them altogether wanting. —

Symptoms of the first stage; usually commences with languor, drowsiness pain in the head and back of the

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neck, hot dry skin, foul tongue, flushed face hurried respiration, quick and sometimes irregular pulse, dilatation or contraction of one or both pupils, a hard dry ~~or~~ wheezing cough, obstinate constipation of the bowels, though the reverse may occur, when the stools are procured by medicine, they are of a greenish appearance, sleep is very much interrupted, frequently starting and screaming as if much alarmed, picking the nose grinding the teeth, and becoming very restless, with exacerbations in the evening and the symptoms becoming milder in the morning.

These symptoms continueing for a few days only; when they are succeeded by others denoting the second stage which are characterized by the patient

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becoming less sensible to the pain in the head and other parts of the system, preternaturae slowness and irregularity of the pulse, the pupils more dilated than in the first stage, strabismus, the vomiting ceases except when raised to the erect posture, respiration becomes laborious, the skin hot and dry, great thirst, frequent sighing and groaning, the tongue very white and ~~sometimes~~ dry, the bowels remain very much confined, the fæces vary both in colour and consistence, they are most commonly of a clay colour, in small quantity, and appear to have an oily substance mixed with them, The patient at this time takes whatever is offered him in either food or medicine: and swallows it with great avidity, and he appears to be quite inco

herent and stupid. We are now presented with the symptoms of the 3rd stage, which are still more violent and certainly indicate a fatal termination. There are widely dilated pupils, the eyelids half closed, with the axis of one or both turned in toward the nose, the eye is sometimes suffused with blood, the pulse returns again to the febrile state of excitement, becoming so weak and quick that it is impossible to count it, the flushing of the face is more frequent and succeeded by a deadly paleness, rolling the head from side to side on the pillow, throwing the hands about involuntarily, the respiration very laborious and performed very slowly, difficult deglutition the features are shrunk, involuntary discharge of the fæces and urine, the urine is in large quantity perfectly clear and limpid, cold

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clammy sweat, lethargic torpor now supervenes. succeeded by convulsions and death.

The emaciation (as observed by a distinguished writer) is singularly rapid what is commonly the effect of an Atrophy of many months taking place in a few days. —

When the progress of the disease has been very rapid, it is not uncommon for the violent symptoms to subside, indicating an expectation of a speedy recovery, but this is a most treacherous, and fatal calm, it being the result of infusion. — The vessels of the brain being previously in a high degree of excitement are in this way relieved; and the attack is suspended, for a short time, the effused fluid acting as a reexciting cause and the disease returns with redoubled violence. —

We may consider the case under these circumstances desperate or nearly so. —

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Effusion is regarded by some writers as certainly fatal, as they deny the existence of absorbents in the brain. But the phenomena of growth not to mention other facts, sufficiently prove, that they must exist in every part of the system: for an absorbent is as necessary in the composition of a living body as a blood vessel each being indispensable to the execution of its primary functions.

But it must be acknowledged that they act very feebly and incompetently in the Hydrocephalic affections. —

The duration of this disease is very uncertain it sometimes proves fatal in three or four days and at others it is protracted to six or eight weeks but the average time of its duration may be stated at twenty one days. —

In examinations, the ventricles are found more or less distended, with fluid, varying in

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quantity, from one to six or eight ounces, it is sometimes as thin as water, and at others thick and ropy. the veins are engorged with blood of a dark grumous colour, adherions and thickening of the membranes of the brain tumours of different sizes, situated in either the substance of the brain or attached to the membranes; the substances of the brain pale and white the abdominal viscera also exhibit marks of disease as inflammation of the liver, stomach, spleen or intestines. – It has often happened that the symptoms of Hydrocephalus have been very strongly marked, when no marked appearances could be discovered in the brain on dissection.

The remote or predisposing causes of this disease appear to consist in a certain state of inactivity and fullness of constitution

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hereditary predisposition and the scrofulous diathesis. The exciting causes are bile, irritation of the stomach and bowels, as produced by worms, suppression of bowel or discharges from scrofulous ulcers about the neck and head, blows or blows upon the head, tumours within the cranium, and all febrile diseases of children which last, have a great tendency to terminate in inflammation or effusion on the brain and more particularly the measles, scarlatina, hooping cough, chronic catarrh, teething, &c. suppression of the nasal hemorrhages, cholera infantum, and diarrhoea. Seeding of certain eruptions from the surface, and in fact all those causes which tend to produce inflammation in general. ——

The proximate cause of this disease is placed by Dr Chapman, than whom it would be vain to look for higher authority

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in an increased and altered action in the bloodvessels of the brain adhesion being merely the effect. Furthermore, says the distinguished professor, though I place the proximate cause of Hydrocephalus centres in a morbid action of the brain, I am not the less persuaded that in a majority of cases it commences in a disordered state of the stomach or some of its dependencies. —

Dr Beddoes believes it to belong to inflammations. Dr Mathias observes that slight inflammation and congestion are the precursors to the aqueous accumulation.

Dr Rush thinks that it should be regarded only as an effect of a primary inflammation a congestion of blood in the brain.

It appears says he that the disease in its first stage is the effect of causes, which produce a less degree of that inflammation

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which constitutes Phrenetis and its second stage is a less degree of that effusion which constitutes serous apoplexy in adults. The former partakes of the chronic inflammation of Dr. Cullen, and the asthenic inflammation of Dr. Brown.

Dr. Darwin supposes inactivity and torpor of the absorbent vessels of the brain to be the cause of this disease, though the torpor of the absorbent vessels may often exist as a secondary effect.

Dr. Wright observes that the immediate cause of every kind of dropsy is the same; such a state of the parts as makes the exhalent arteries throw out a greater quantity of fluid than the absorbents can take up which state he considers as consisting in debility.

From the authorities as quoted above

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it will appear that it arises from congestion and slight inflammation of the brain and sometimes from general debility and laxity of that organ. The former opinion I am inclined to think the most plausible from the appearances on dissection and the general mode of treatment pursued in this disease. That it does sometimes proceed from the latter we have sufficient authority to prove, but those cases are comparatively few.

The diseases which Hydrocephalus acutus most resembles, are some of the typhoid states of fever, apoplexy, worms &c. It may be distinguished from the typhoid states of fever, by frequent remissions, by idiopathic fever not being common in young subjects while they are more subject to the attacks of Hydrocephalus than adults.

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It differs from apoplexy, by being attended with fever, more common to children and not as sudden and violent in its attacks. There are no symptoms by which we can correctly ascertain the difference between this disease, and worms, except where worms are present, the abdomen is tumid and tense. We may arrive at a greater degree of certainty in the diagnosis by paying strict attention to the history of the case from its commencement.

Recoveries, may take place from the first stage of this disease; very rarely from the second, and never from the third. In the prognosis of this disease when delirium stupor, widely dilated pupils, strabismus, deafness, laborious respiration, difficult deglutition loss of sight, weak quick and irregular pulse, the patient cannot be raised

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to the erect posture without its producing violent pain in the head, and sickness at the stomach, involuntary discharges of faeces and urine the urine in large quantity perfectly clear and limpid, attended by convulsions the disease will certainly terminate fatally in a very short time.

The disease is most frequently seated in the Arachnoid Membrane of the brain, though all of the membranes exhibit marks of disease, on dissection. It sometimes depends upon congestion in the blood vessels, or inflammation of the substance of the brain itself. Water may continue in the ventricles of the brain many months without producing the symptoms of Hydrocephalus Acutus, when the accumulation has been very gradual. and at other times all the pathognomonic symptoms of Hydrocephalus Acutus

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are present without discovering any marks of disease in the brain, or accumulation of water within the ventricles.

In the treatment of the first or inflammatory stage of this disease the first indication to be attended to is to prevent effusion to subdue vascular action and diminish the undue determination of blood to the head, which is best effected by bloodletting, copious purging, occasional vomiting, blisters &c. to derive the most benefit from bloodletting we should open the temporal artery or jugular vein.

The quantity to be drawn can only be determined by the age of the patient and the violence of the symptoms present. Unless we bleed instantly, a perceptible impression be made on the circulation it will be of but little benefit, if any at all.

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of the indispensable necessity of blood-letting (says a distinguished writer) I can hardly express myself too strongly.

Dr Maxwell was in the habit of bleeding from the jugular vein till fainting was produced, the patient being placed in the recumbent posture, of minute cases treated in this way Dr Maxwell states that sixty recovered.

Immediately after bleeding we should give an active purgative of calomel combined with Jalap or Rhubarb, gamboge scammony or aloes, which should be repeated at short intervals, until copious evacuations are produced. After the bowels have been thoroughly emptied of their vitiated contents, we should resort to the antimonial preparations in small and ~~frequently~~ repeated doses so as to keep up

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a constant nausea at the stomach to ~~counteract~~ the determination of blood to the head to relax the capillaries of the surface and promote diaphoresis. The bowels must be kept in a laxative state by the use of Rhubarb aloes or the neutral salts in small doses.
Cold applications to the head are very useful, in the early stages of this disease, bathe wet in vinegar and water, rather and water or use water alone, and applied to the head is the most convenient mode of using it. changing them as often as they become warm, a stream of water directed immediately on the head has often been productive of the happiest effects.
Local bleeding is likewise indispensable when the inflammatory symptoms have not entirely subsided, cups are preferable to leeches from the promptness of their action.
Blisters should not be neglected at this stage

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of the complaint, they should be applied on the back of the neck, wrists and ankles and a discharge kept up from them for several days by stimulating dressings, the Ceratum cantharides, or the Ceratum Sabinæ may be used for this purpose either of which is capable of producing a sufficient degree of excitement. The Mercurial ointment has likewise been recommended for the keeping of blisters. Caustic applied to the cranium is said by some writers to be preferable to blisters, and it is a more powerful stimulant and more permanent in its effects it may possibly be more useful. The nitrate of silver is preferred for this purpose. When the symptoms of the second stage have commenced indicating effusion to have taken place bleeding will be ineffectual and sometimes prove injurious. The head should be shaved and a blister be applied entirely

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Purgatives should likewise be used to rid the bowels of their acrid contents; calomel with its ordinary adjuncts answer this purpose best. Emetics combined with purgatives are very valuable in this stage of the disorder. Dr. Carmichael Smith recommends very highly the squill combined with calomel, digitalis is sometimes used but with little advantage, the neutral salts scammony gamboge, aloes and rhubarb, are sometimes used with good effects, but they are all inferior to Mercury. After effusion has taken place this medicine should be given in as large and frequently repeated doses as the patient can bear; it should be applied also by inunction so as to excite salivation as speedily as

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possible. Drs Dobson and Percival says that the relief was decided as soon as the mercury took effect; We believe it to be the only remedy which can cure the disease after effusion and this very often fails.

Dr Cheyne tells us he succeeded in curing the disease with the James' powder.

When the patient is convalescent he should be supported with, arrow root, sago, tapioca Jellies, light baths &c mild and stimulating drinks, wine with proper tonics and moderate exercise in the open air. These are the remedies most conducive to the restoration of health. —

But in conclusion it must be admitted that after effusion has taken place there is but little to be expected from our remedies.